HEAVY BARREL

T.M.

UPRIGHT MODEL NUMBER: 1US33

SERVICE & OPERATION MANUAL



DATA EAST USA, INC.
470 NEEDLES DRIVE
SAN JOSE, CA 95112
TELEPHONE: (408) 286-7074

PART NUMBER: 780-0087-00

FCC WARNING

This equipment generates and uses radio frequency energy and if not installed and used properly, ie; in strict accordance with this instructions manual, may cause harmful interference to radio communications. This equipment has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of the FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment.

Operation of this equipment in a residential environment is likely to cause interference in which case the user, at his own expense, will be required to take whatever measures are necessary to correct the interference.

FBI WARNING

Federal law provides severe civil and criminal penalties for the unauthorized reproduction, distribution, or exhibition of copyrighted audio-visual works and video games. The Federal Bureau of Investigation investigates allegations of criminal copyright infringemant.

COPYRIGHT NOTICE

ENVIRONMENTAL DATA

This product is intended for use indoor use only, power requirements are 105-125 volts AC, 50-60 hz, and requires a 3 wire grounded outlet.

SERVICE PROCEDURES

To obtain replacement parts and technical service, contact the authorized Data East Distributor in your area. If you require referral or further technical assistance, you may contact Data East's Customer Service department during the hours of 8:00 am to 5:00 pm Pacific Time at (408) 286-7074.

HEAVY BARREL ™

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SERVICE & OPERATION MANUAL

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FIRST PRINTING
FEBRUARY 1988

PN: 780-0087-00

1. GENERAL INFORMATION

A. Installation and Set-Up.

Locate the door keys supplied and remove the Rear Access Door.

Check the Main Harness for loose or unplugged connectors, and check for secure mounting of the monitor, power supply, and game pcb. Stabilize the cabinet using the leg levelers in the floor of the cabinet to prevent the game from rocking.

The selectable options have been pre-set at the factory for optimum player appeal, however, refer to Chapter 2, Section A; Dip Switch Options in this manual to set the game up for special requirements.

Remove the power cord from the inside of the cabinet and insert the strain relief plate into the slot at the bottom of the rear access door opening. Plug the AC cord into a grounded 117 VAC outlet and flip the power switch to the ON position. Allow 2 to 3 minutes for the monitor to warm up and check for proper demonstration mode video on the screen. Insert the proper coinage into a coin slot and start a game. Check for proper operation of all joystick controls and switches.

Complete the Customer Reply Card in the rear of this manual to receive a copy of the Heavy Barrel Technical Support Manual. Please indicate if you would like to receive periodic mailings of technical information, updates, etc.

B. System Adjustments.

The Volume Control, Coin Counter, and Service Switch are located on the Service Panel. The Service Panel is located inside the Coin Door, mounted on the wall of the cabinet on the left side.

The Coin Counter increments once for every coin dropped through either coin entry slots.

The Volume Control is used to adjust the overall loudness of the game sounds. NOTE: The volume control potentiometer on the Main pcb is pre-set to mid-range at the factory and should not be adjusted.

The Service Switch can be used to add credits to the game without incrementing the Coin Counter.

The fuses for the AC power line and the 12 volts for the Coin Door lamps are located on the Power Supply assembly. The fuse holders are labeled as to the proper fuse ratings.

The +5 vdc adjustment level control is on the Power Supply's Switching Regulator is pre-set at the factory. In the event that an adjustment is required, measure the +5 volt level present at the game logic pcb with a Digital Multi-Meter while adjusting the output level of the Switching Regulator. The voltage must measure between +4.90 vdc to 5.10 vdc at the game logic pcb for proper operation.

WARNING: DANGEROUS VOLTAGE LEVELS ARE PRESENT IN AND AROUND THE MONITOR AND POWER SUPPLY ASSEMBLY. ADJUSTMENTS AND REPAIRS SHOULD BE ATTEMPTED ONLY BY QUALIFIED ELECTRONIC TECHNICIANS.

2. GAME INFORMATION

A. Game Options.

The game options can be changed via 2 banks of dip-switches on the game PCB set. Be certain to remove power to the game when changing settings.

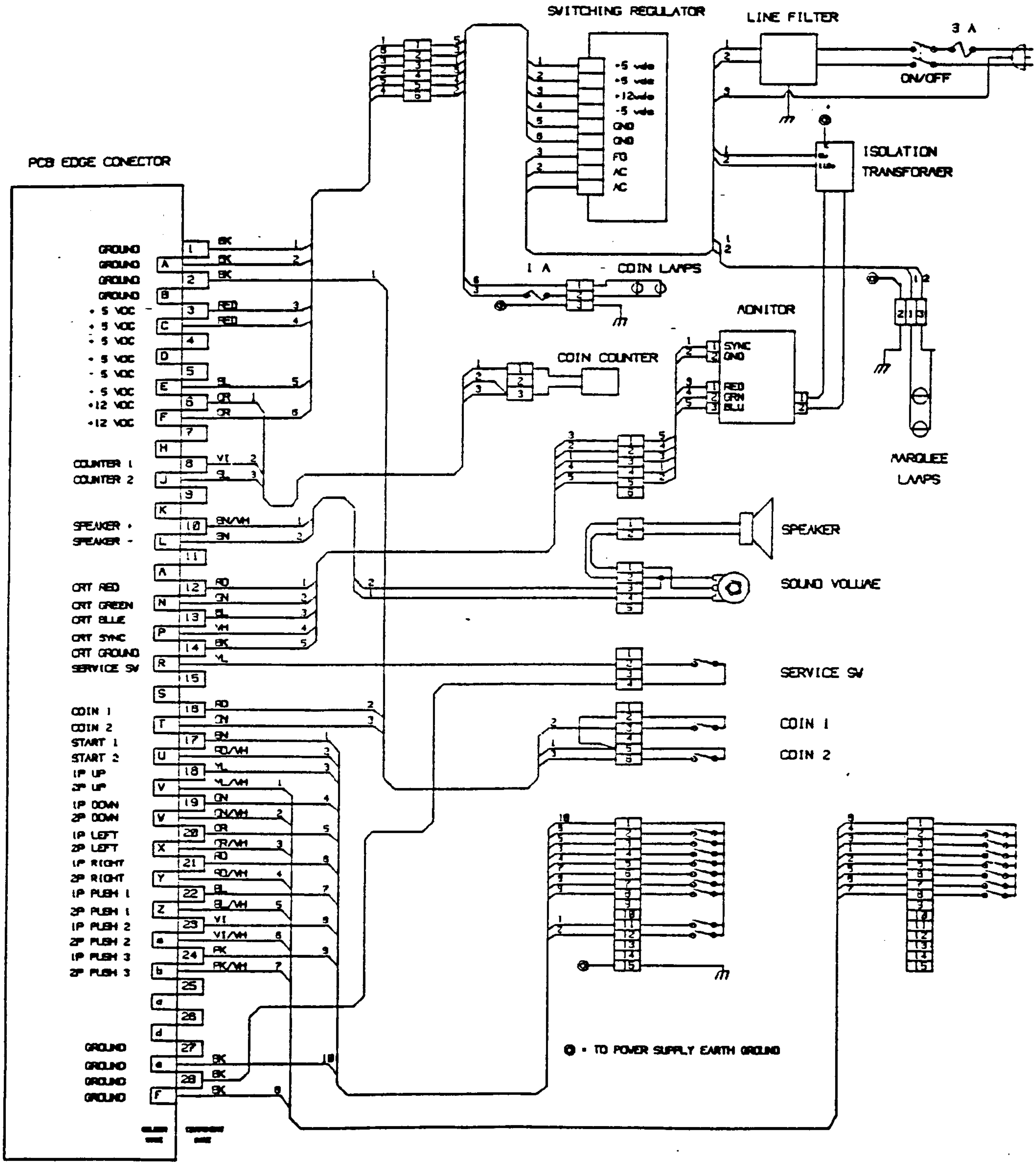
DIP SWITCH 1

ITEM	ACTION	1	2	3	4	5	6	7	8
COIN	1 COIN = 1 CREDIT:	OFF	OFF						
VS	1 COIN = 2 CREDIT:	ON	OFF						
CREDIT	1 COIN = 3 CREDIT:	OFF	ON						
COIN 1	2 COIN = 1 CREDIT:	ON	ON						
COIN	1 COIN = 1 CREDIT:			OFF	OFF				
VS	1 COIN = 2 CREDIT:			ON	OFF				
CREDIT	1 COIN = 3 CREDIT:			OFF	ON				
COIN 2	2 COIN = 1 CREDIT:			ON	ON				
DIAGNOSTICS MODE	NO:					OFF			
	YES:					ON			
DEMO MODE SOUND	YES:						OFF		
	NO:						ON		
SCREEN REVERSE	NORMAL:							OFF	
	FLIP:							ON	
DON'T CHANGE									OFF

DIP SWITCH 2

ITEM	ACTION	1	2	3	4	5	6	7	8
NUMBER OF	THREE (3):	OFF	OFF						
LIVES	FIVE (5):	ON	OFF						
	ONE (1):	OFF	ON						
	INFINITE (∞):	ON	ON						
GAME	NORMAL:			OFF	OFF				
DIFFICULTY	HARD:			ON	OFF				
	NORMAL:			OFF	ON				
	FAST:			ON	ON				
BONUS LIVES	30K»80K»160K:					OFF	OFF		
AWARDED AT:	50K»120K»190K:					ON	OFF		
	100K»200K»300K:					OFF	ON		
	150K»300K»450K:					ON	ON		
CONTINUE MODE	NO:							OFF	
(BUY-IN)	YES:							ON	
DON'T CHANGE	:								OFF

B. Wiring Diagram.

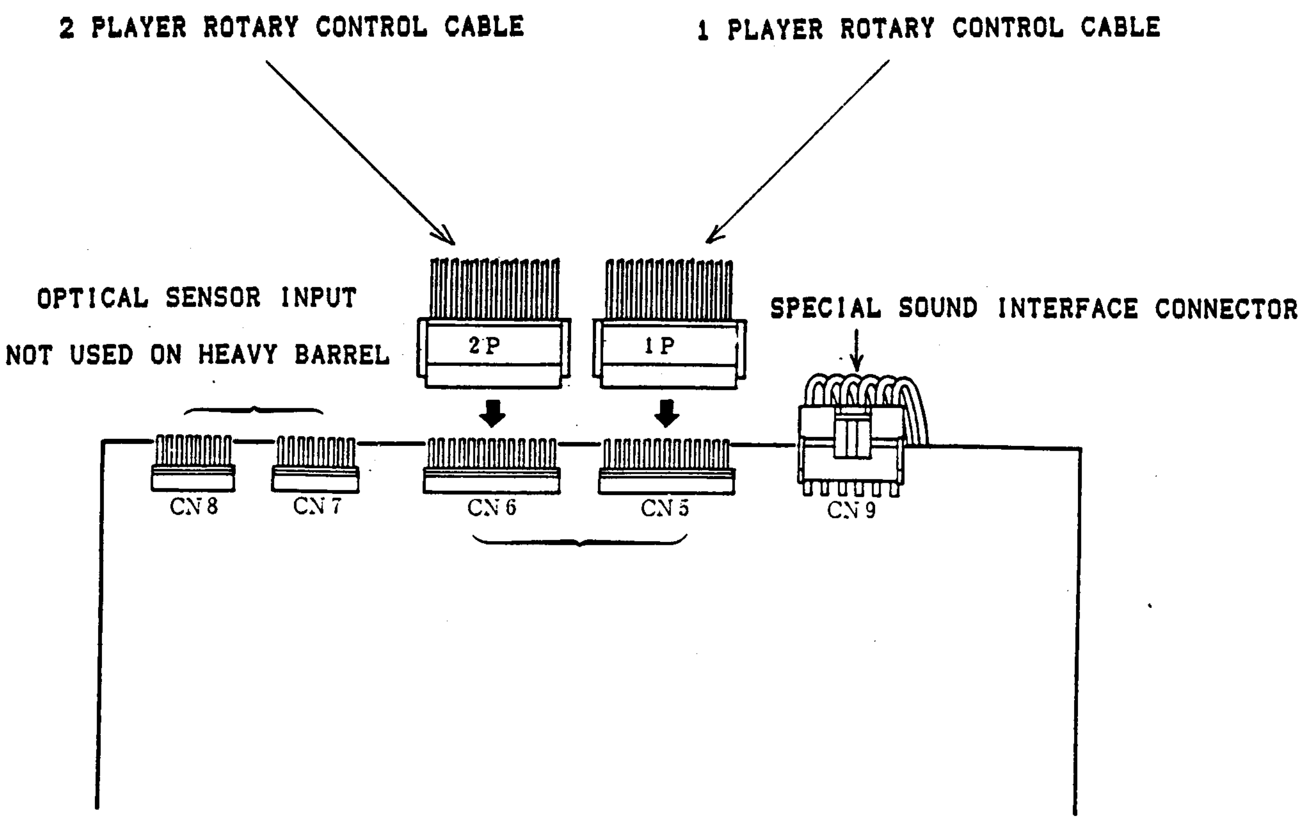


B. Wiring Diagram. (continued)

CONNECTOR 9	
PIN	FUNCTION
1	AUDIO OUT
2	AUDIO GND
3	DC GROUND
4	+ 5 VOLTS
5	+12 VOLTS
6	- 5 VOLTS

CONNECTOR 7 & 8	
PIN	FUNCTION
1	+ 5 VOLTS
2	+ 5 VOLTS
3	GROUND
4	GROUND
5	INPUT XA
6	INPUT XB
7	INPUT YA
8	INPUT YB

CONNECTOR 5 & 6	
PIN	FUNCTION
1	GROUND
2	INPUT 1
3	INPUT 2
4	INPUT 3
5	INPUT 4
6	INPUT 5
7	INPUT 6
8	INPUT 7
9	INPUT 8
10	INPUT 9
11	INPUT 10
12	INPUT 11
13	INPUT 12



3. REPLACEMENT PARTS LIST

FINAL ASSEMBLY

CABINET, EMPTY, 1US25 STYLE, GREY	365-0010-00
CONTROL PANEL ASSY., HEAVY BARREL	510-0131-00
COIN DOOR ASSY., COIN CONTROL	510-0004-00
MONITOR ASSY., UNIVERSAL H/V	510-0065-00
POWER SUPPLY ASSY., 11AMP	510-0002-01
PCB SET, HEAVY BARREL	510-0126-00
PLEX, CLEAR, DISPLAY 23.75 X 23.75	660-0001-01
UNDERLAY CARD, HEAVY BARREL	810-0029-00
DECAL, SIDE, GENERIC	820-0040-00
PLEX, MARQUEE, HEAVY BARREL	830-0037-00
RETAINER, PLEX, MARQUEE	535-0009-00
SPEAKER, 6 X 9" OVAL	031-0006-00
HARNESS, MAIN, JAMMA STD. U/R	036-0159-02

CONTROL PANEL

CONTROL PANEL, BARE	535-0061-00
OVERLAY, CTRL PNL, HEAVY BARREL	800-0030-00
PUSHBUTTON, RED (GRENADE)	350-0016-02
PUSHBUTTON, YELLOW (START)	350-0016-04
PUSHBUTTON, SHORT, GREY (SHOOT)	350-0001-08
PUSHBUTTON HOLDER W/SWITCH	185-0001-00
PAL NUT, NYLON	240-0001-01
HARNESS, CTRL PNL, 1P/2P, 2S.	036-0115-01
JOYSTICK, ROTARY, WICO	450-0012-00

MISCELLANEOUS PARTS

REGULATOR, 5V @ 11 A & 12V @ 1 A	001-0012-00
ISOLATION TRANSFORMER	010-0001-00
AC LINE FILTER	150-0004-00
CASHBOX, PLASTIC	545-0004-00
FIXTURE, LAMP, DUAL	170-0002-00
LAMP, 40 WATT, INCANDESCENT	165-0004-01
COIN LAMP, 14 VDC .19 AMP WEDGE, #161	165-0009-00
SERVICE PANEL ASSY.	515-0029-02
COIN COUNTER, 12 VOLT	090-0002-00
POT, 100 Ω 4W 1/4" SHAFT	123-0008-11
SWITCH, PUSHBUTTON, MOM. (SERVICE SW.)	180-0022-00

CUSTOMER REPLY CARD

To receive your copy of the Heavy Barrel Technical Service manual (including schematic diagrams), return the form below to the Data East, please include the Serial Number of the game cabinet. No manuals will be sent without Serial Numbers. Indicate if you would like to be on our Direct Mail list for service information.

We welcome your feedback, so please include any comments you have regarding our products and services in the section below and mail this form to:

Data East USA, Inc.
470 Needles Drive
San Jose, CA. 95112
Attn: Customer Service Dept.

- -

HEAVY BARREL TECHNICAL SUPPORT MANUAL REQUEST FORM

COMPANY NAME: ______________________________

ADDRESS: ______________________________

CITY: ______________ STATE: __________ ZIP: __________

TELEPHONE: ______________________________

YOUR NAME: ______________ TITLE: ______________

GAME CABINET SERIAL NUMBER: ______________________________

ADD YOUR COMPANY TO OUR DIRECT MAIL LIST? (circle one) YES NO

COMMENTS: ______________________________

WARRANTY INFORMATION

Data East USA, Inc., ("Seller"), warrants only to the original purchaser ("Buyer"), of its products that the items listed below are free from defects in material and workmanship under normal use and service for the period specified:

GAME LOGIC PRINTED CIRCUIT BOARD(S)	**90 DAYS**
SWITCHING REGULATOR(S)	**30 DAYS**
MONITOR PRINTED CIRCUIT BOARD(S)	**30 DAYS**

No other parts of the Seller's products are warranted.

Warranty periods are effective from date of initial shipment from Seller to Buyer. Seller's sole liability shall be, at its option, to repair or replace products which are returned to Seller during the warranty periods specified, provided:

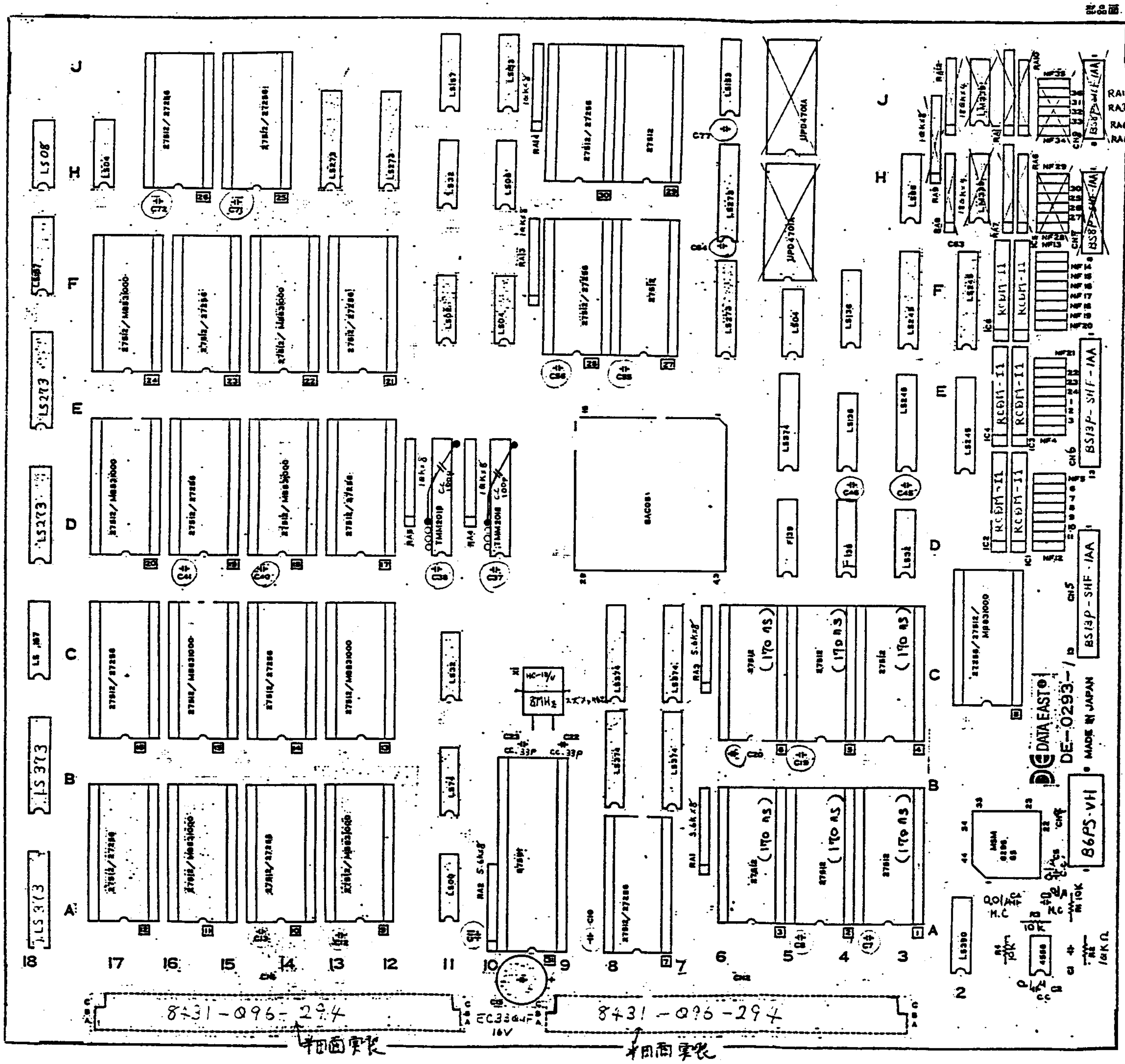
1. Seller is notified promptly upon discovery by buyer that stated products are defective.
2. Such products are properly packaged and then returned freight pre-paid, to a place specified by Seller.

This warranty does not apply to products damaged during shipment and/or due to improper handling, or due to improper installation or usage, or alteration. In no event shall Seller be liable for any anticipated profits, loss of profits, loss of use, accidental or consequential damages, or any other losses incurred by the customer in connection with the purchase of a Data East USA, Inc., product.

WARRANTY DISCLAIMER

EXCEPT AS SPECIFICALLY PROVIDED IN A WRITTEN CONTRACT BETWEEN SELLER AND BUYER, THERE ARE NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

PRELIMINARY



★ NF1~NF24 には、ノイズフィルタ (MTX222MB) を使用

★ 指示のない コンデンサーは 実装せず

★ 2J,2H (LM339) は MB4204 を実装する

★ ソケット マークがあるものは ソケットを使用

★ CN1, CN2 は 半田面に実装。

★ (C.XX) 印は 0.1μ cc を 実装する。

★ □~□までの ROM は 170ns とする。

★ □~□までの ROM は 250ns とする。

★ X印 のある部品は実装しない

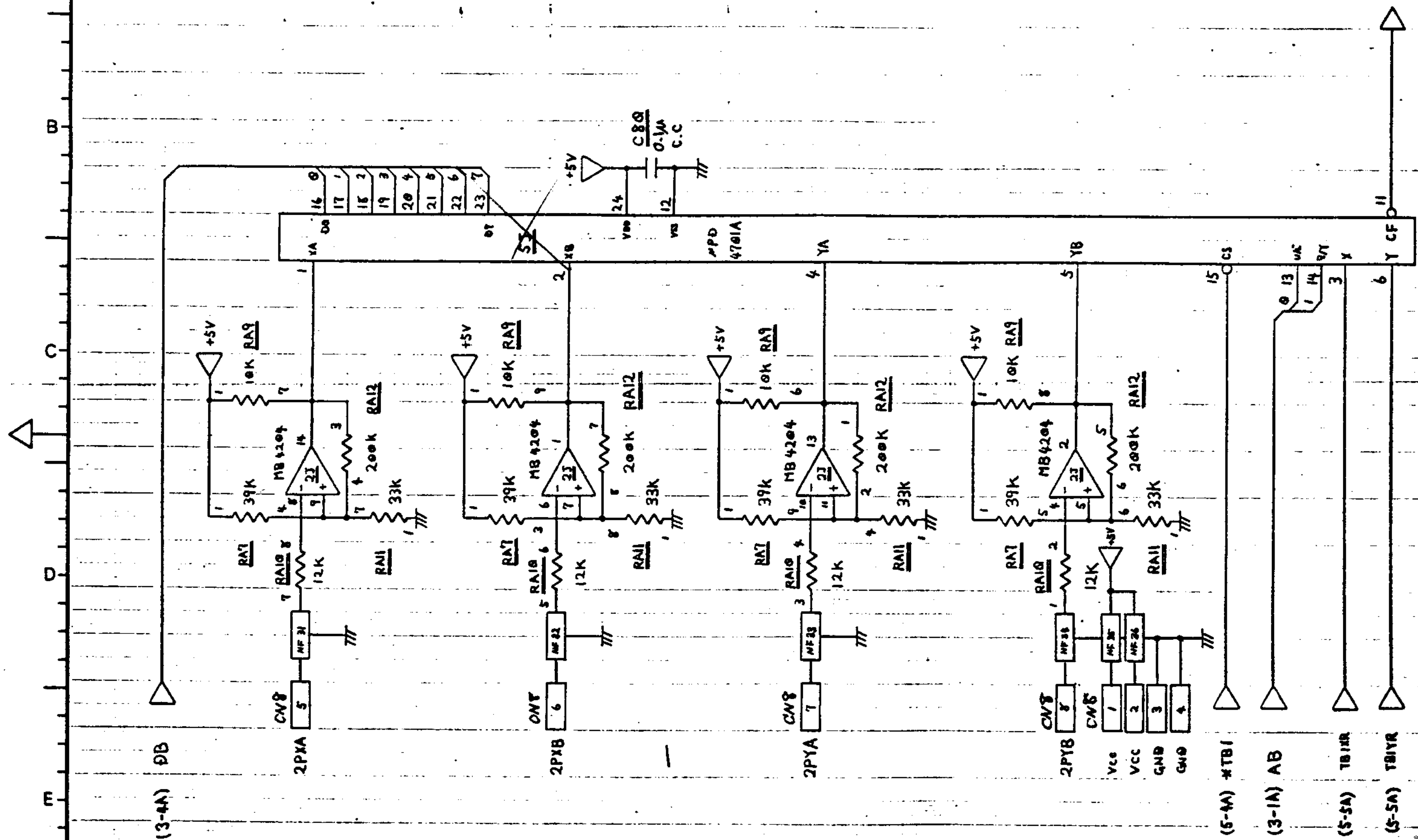
★ ROM No. は ソケットのそばの(□~□)と同じ番号である。

BACK RAM エラー対策として 10D#21, 10B#21 におのおの C.C. 100pF を付け GNDと接続すること。 1/5 岩部

Heavy Barrel.

記号	担当	年月日	改訂個所	符号	部品, 図面番号	名称	仕様, 材質	個/台
材質		処理		公差		名称 DE-0293 SA-1U用 HFT-No1 実装図		
承認 星野 62.11.26	検図	検図 渡辺 62.11.25	担当 岩部 62.11.5	単位 mm	尺度 /	図面 LK-10103		1/1

関連番号	仕様、名称



記号	担当	年月日	改訂個所	符号	部品、図面番号	名称	仕様、材質	個/台

材質、	処理	公差	名称	HFT-No1 回路図
承認 星野 62.10.26	検図	検図 渡辺 62.10.22 / 担当 岩部 62.10.14	単位 mm / 尺度 /	図番 LK-10082 17/17

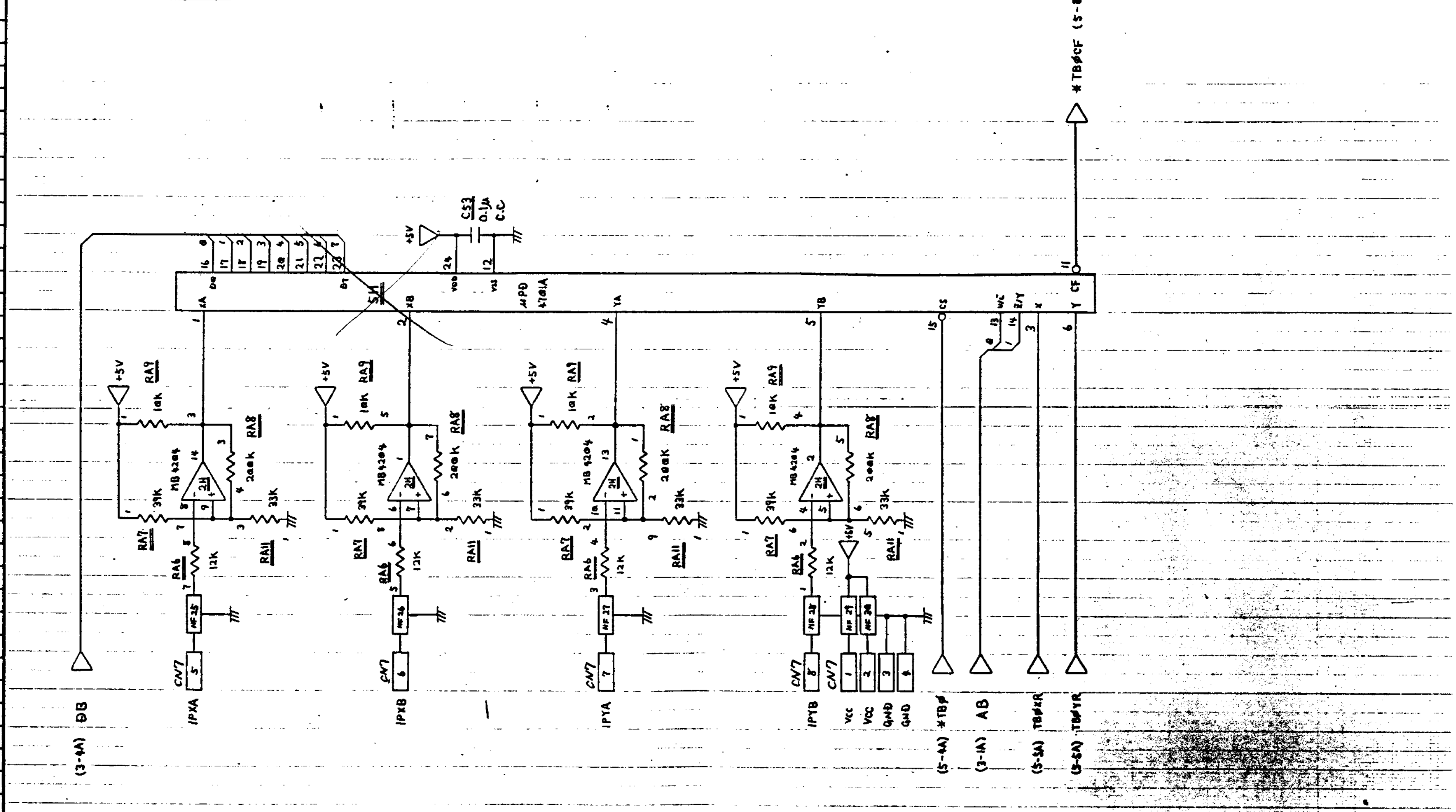
記事 * 39kΩ、33kΩ 及び 10kΩ の抵抗は集積抵抗（8素子 コモンタイプ）を使用。
12kΩ、200kΩ の抵抗は集積抵抗（4素子 独立タイプ）を使用。

MTX322MB (大阪特電)

第3角法

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関連番号	仕様、名称



記事 ＊39kΩ、33kΩ、及び10kKΩの抵抗は集積抵抗（8素子コモンタイプ）を使用。
12kΩ、200kΩの抵抗は集積抵抗（4素子独立タイプ）を使用。

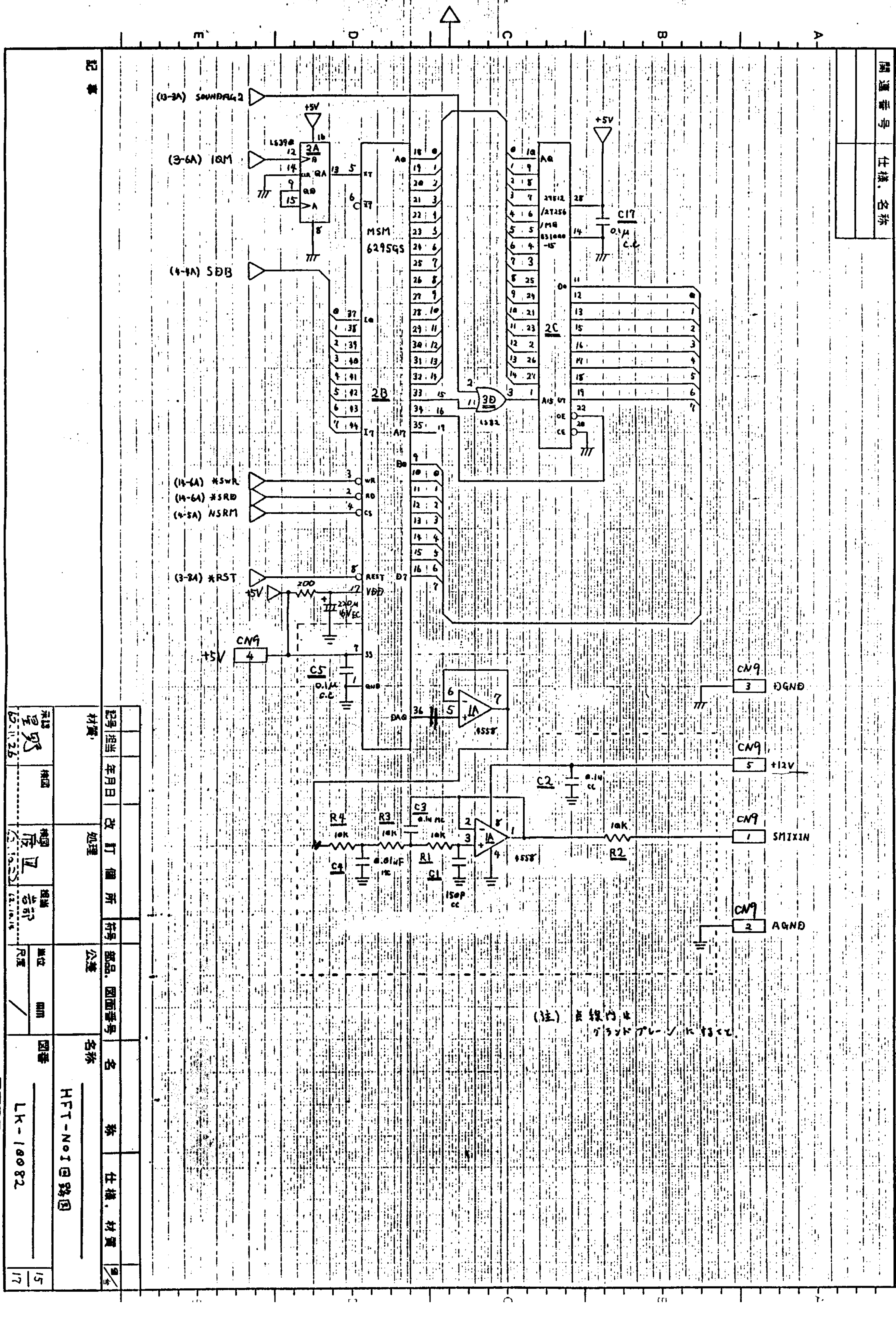
MTK222MB
（対集抵抗）

記号	担当	年月日	改訂個所	符号	部品、図面番号	名称	仕様、材質	個/台

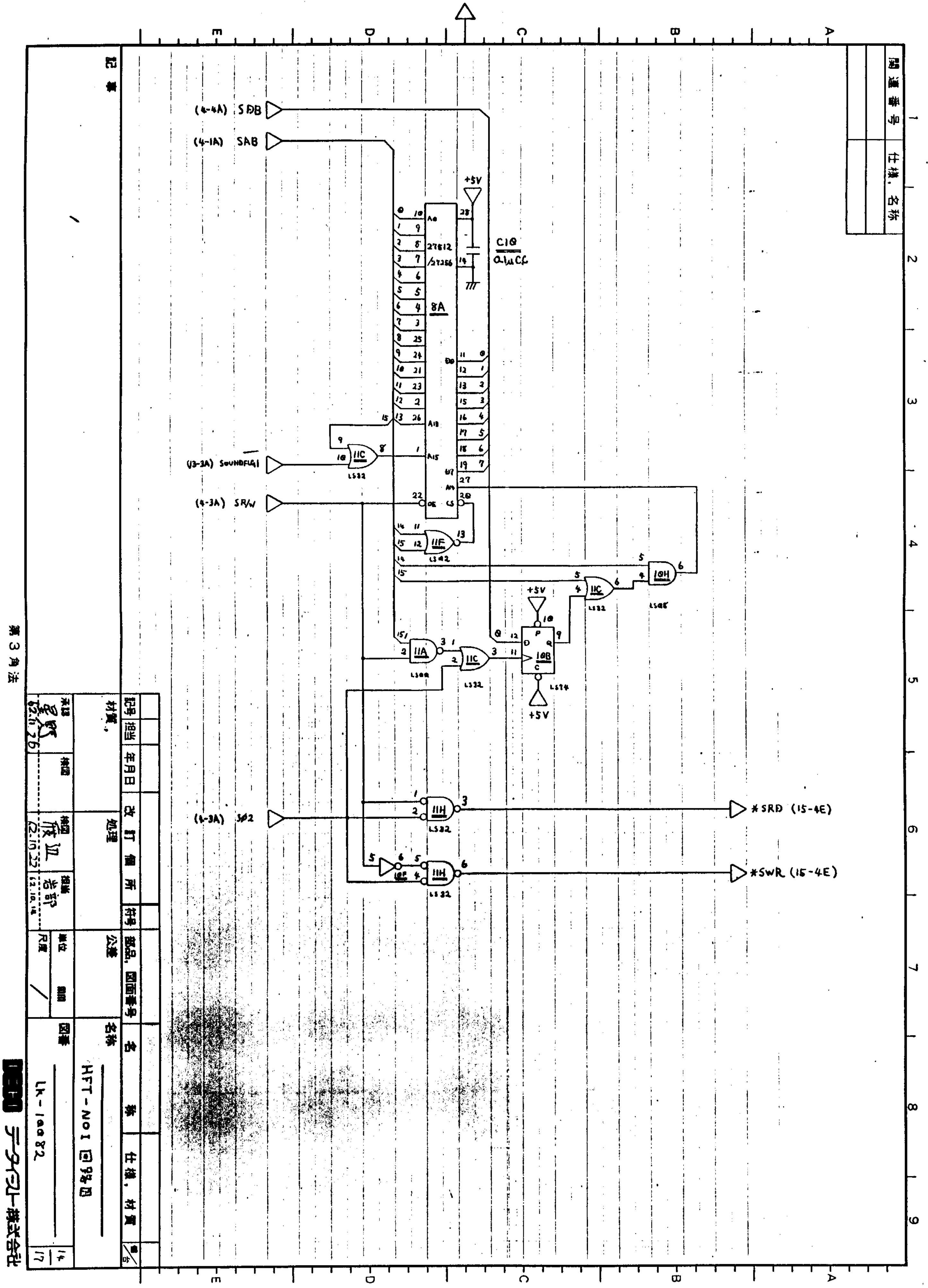
材質,	処理	公差	名称	HFT-NOI 回路図
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図番	LK-10082	16/17		

第3角法

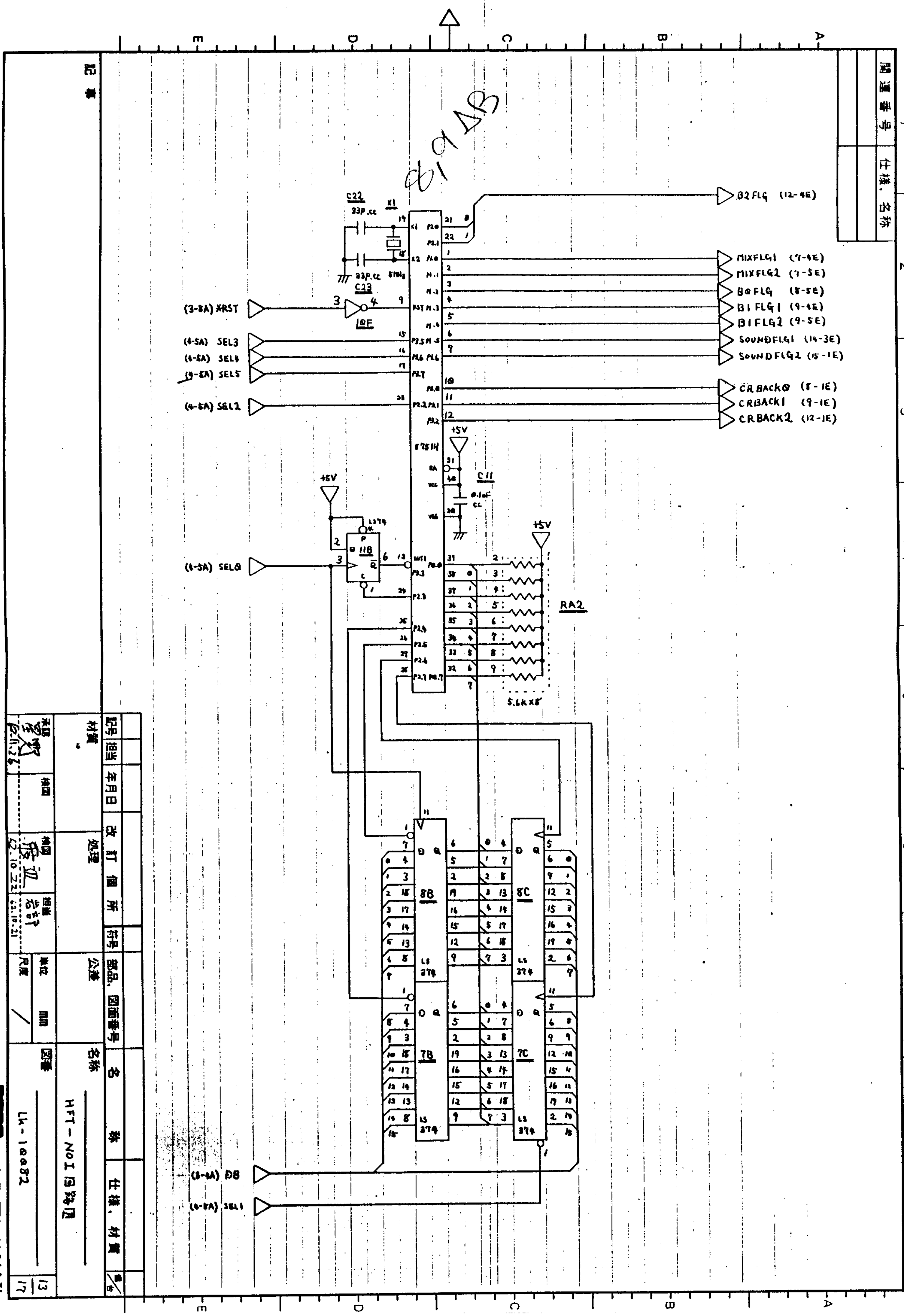
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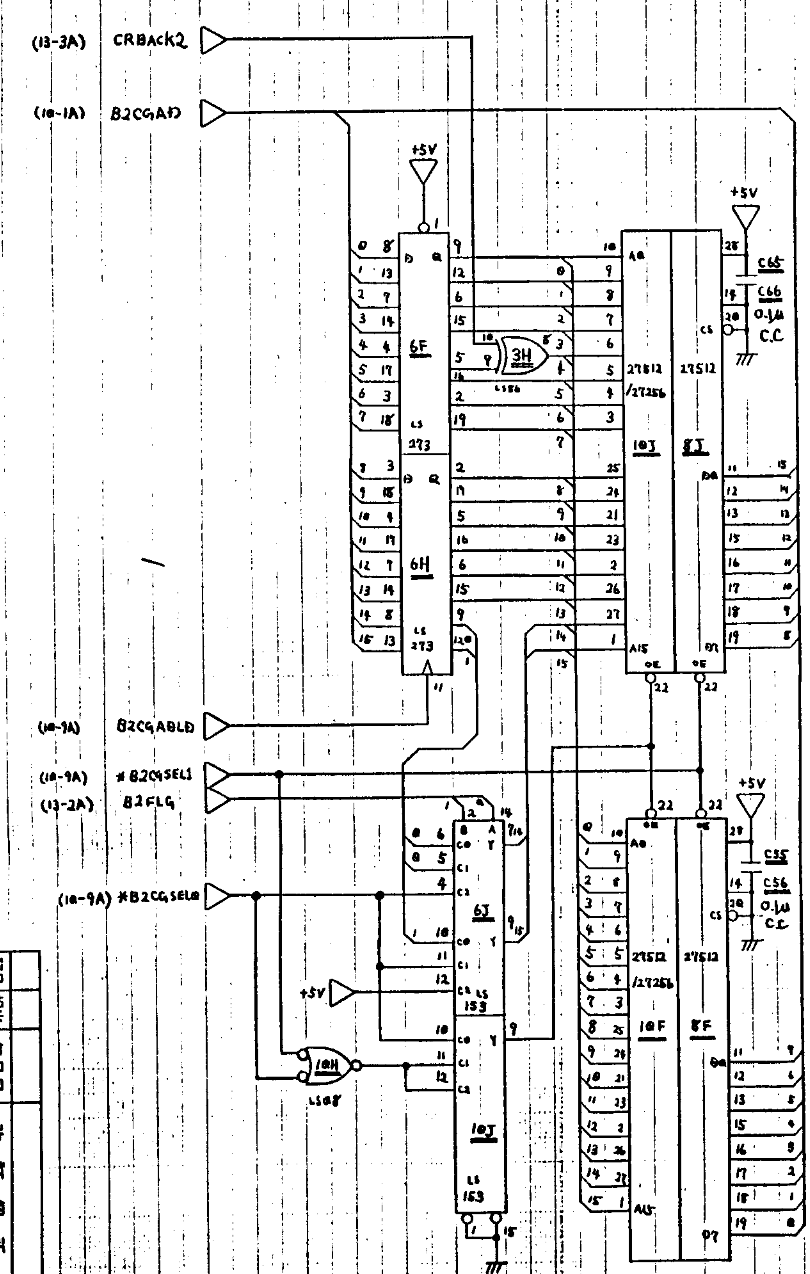
(13-3A) SOUNDFLG2
(3-6A) 1QM
(4-4A) SDB
(14-6A) *SWR
(14-6A) *SRD
(4-5A) NSRM
(3-8A) *RST
+5V
LS393
3A
MSM 6295GS
2B
2C
27512 /27256 /MB 831000 -15
3D
LS32
C17
0.1μ C.C
C5
0.1μ C.C
220μ 16V EC
200
CN9
1A
4558
C2
0.1μ CC
R4
10K
R3
10K
C3
0.1μ MC
R1
10K
C4
0.01μF MC
C1
150P CC
R2
10K
CN9 3 DGND
CN9 5 +12V
CN9 1 SMIXIN
CN9 2 AGND
(注) 点線内は グラウンドプレーンにすること
関連番号
仕様、名称
記事
材質
処理
公差
記号
担当
年月日
改訂箇所
符号
部品、図面番号
名称
仕様、材質
名称 HFT-NoI回路図
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第3角法



(4-4A) SDB
(4-1A) SAB
+5V
27512
/27256
8A
C10
0.1μCf
(13-3A) SOUNDFLG1
11C
LS32
(4-3A) SR/W
11F
LS02
10H
LS08
+5V
10B
LS74
11A
LS00
+5V
(4-3A) SΦ2
11H
LS32
*SRD (15-4E)
*SWR (15-4E)
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B2FLG (12-4E)
MIXFLG1 (7-4E)
MIXFLG2 (7-5E)
B0FLG (8-5E)
B1FLG1 (9-4E)
B1FLG2 (9-5E)
SOUNDFLG1 (14-3E)
SOUNDFLG2 (15-1E)
CRBACK0 (8-1E)
CRBACK1 (9-1E)
CRBACK2 (12-1E)
(3-8A) XRST
(4-5A) SEL3
(4-5A) SEL4
(4-5A) SEL5
(4-5A) SEL2
(4-5A) SEL0
(3-4A) DB
(4-5A) SEL1
C22
33P.cc
C23
33P.cc
X1
8MHz
10F
8751H
+5V
C11
0.1uF
11B
LS74
RA2
5.6K×8
8B
8C
7B
7C
LS374
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記事

第3角法

記号	担当	年月日	改訂個所	処理

材質

62.11.26 / 62.10.22 / 62.8.12

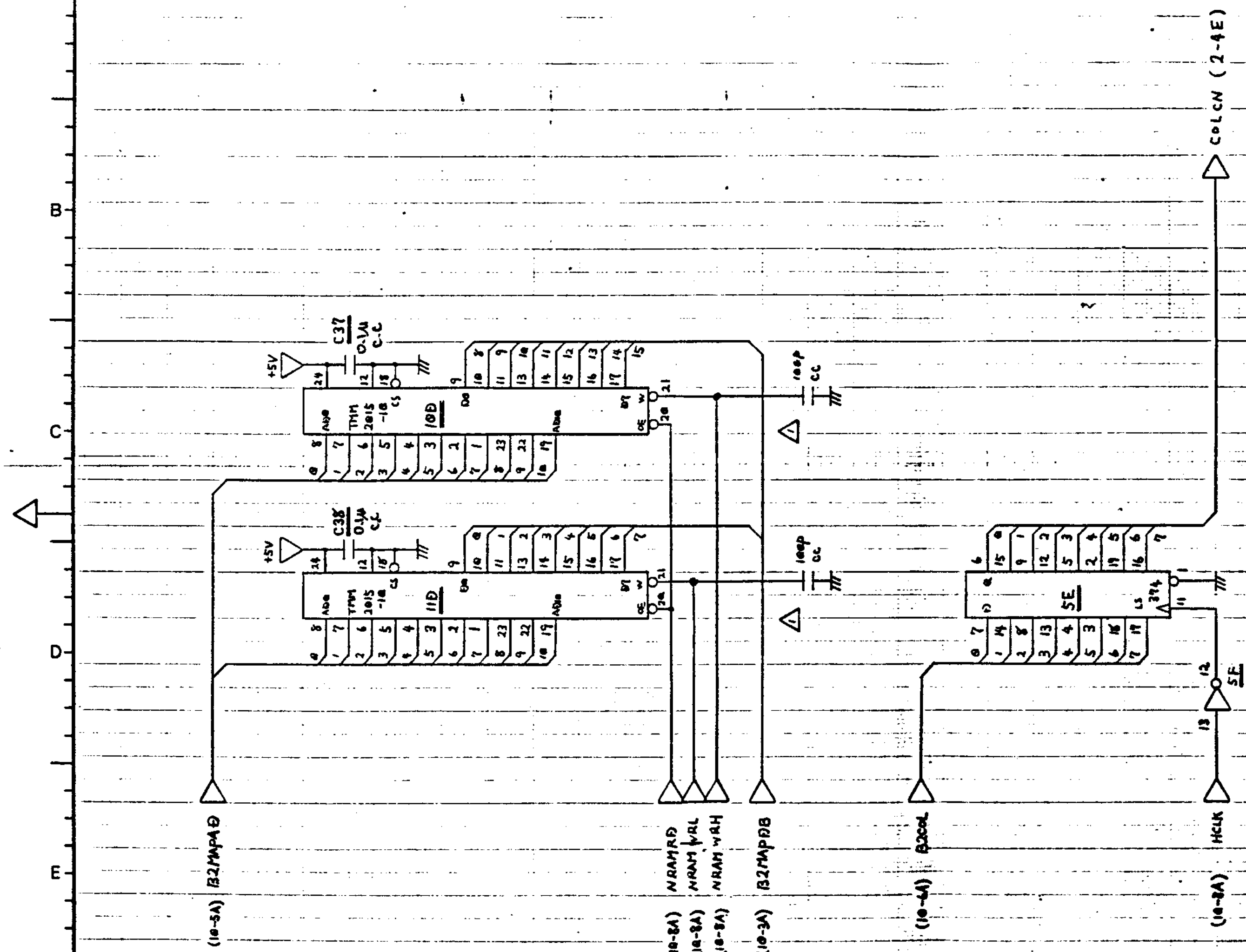
部品、図面番号 / 公差 / 単位 mm / 尺度 /

名称 HFT-NoI 回路図

図番 LK-10082

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12/17



関連番号	仕様、名称

記事 △ 始めの100台セットのみにつける。12/8 岩部

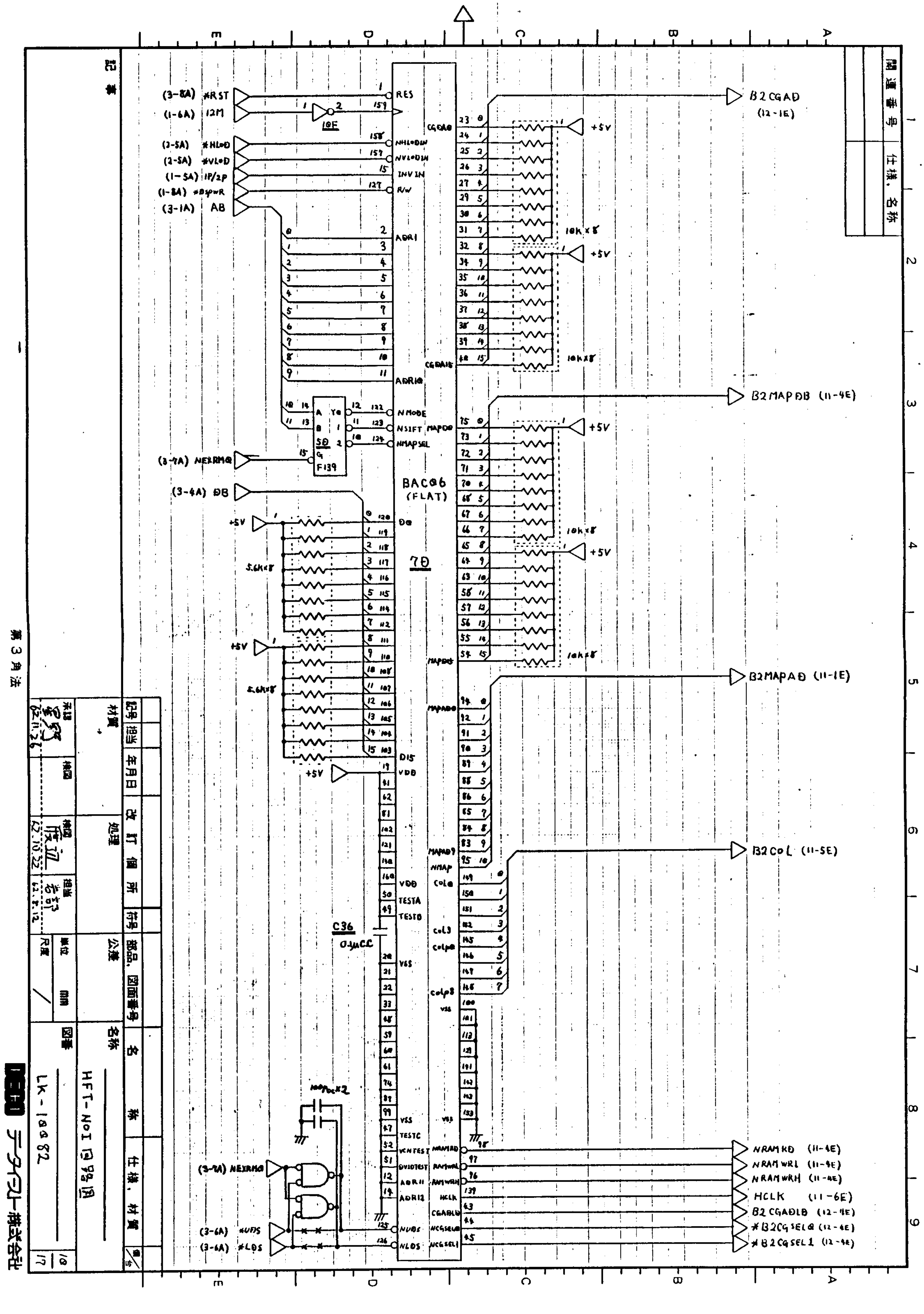
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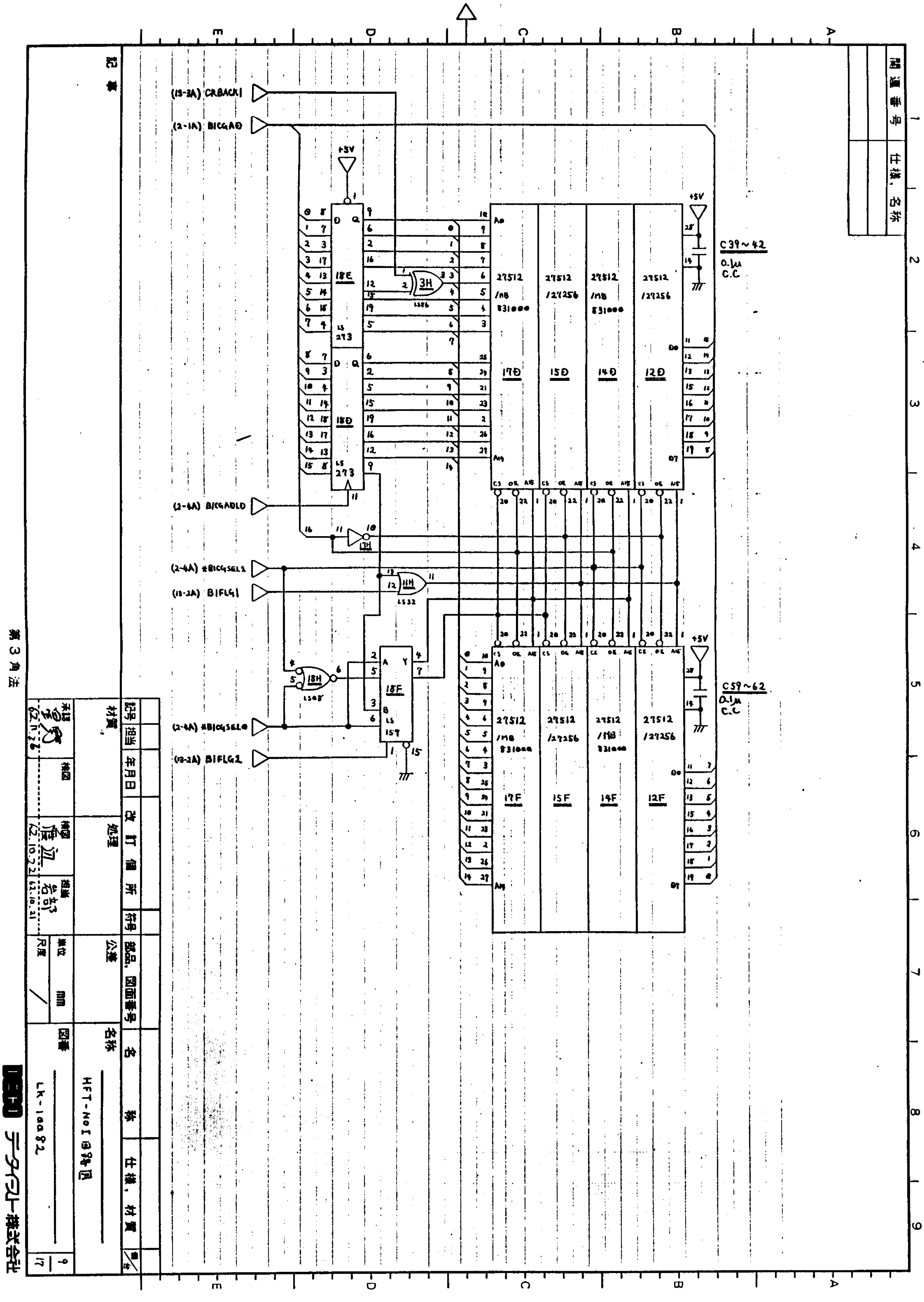
材質	処理	公差	名称 HFT-No1 回路図
承認 62.11.26 / 検図	検図 62.10.22 / 担当 岩部 62.8.12	単位 mm / 尺度 /	図番 LK-10082-1

11/17

第3角法

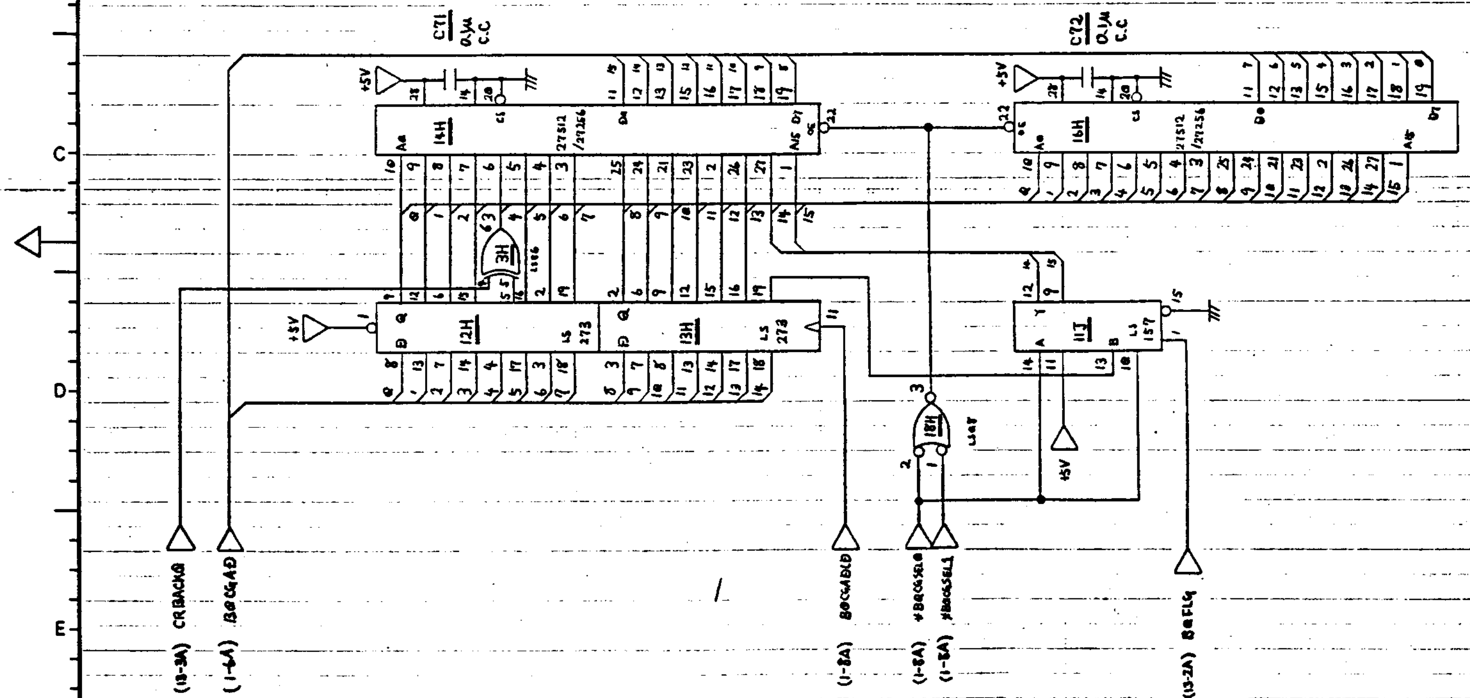
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(3-8A) #RST
(1-6A) 12M
10E
(2-5A) #HLoD
(2-5A) #VLoD
(1-5A) 1P/2P
(1-8A) #DspWR
(3-1A) AB
RES
NHLoDIN
NVLoDIN
INVIN
R/W
ADR1
ADR10
CGDA0
CGDA15
NMODE
NSIFT
NMAPSEL
MAPD0
MAPD15
MAPA0
MAPA9
(3-7A) NEXRMQ
5D
F139
(3-4A) DB
BAC06
(FLAT)
7D
D0
D15
VDD
TESTA
TESTB
VSS
TESTC
VCNTEST
DVIDTEST
ADR11
ADR12
NUDS
NLDS
NMAP
Col0
Col3
Colp0
Colp8
NRAMRD
RAMWRL
RAMWRH
HCLK
CGABLB
NCGSEL0
NCGSEL1
+5V
10k×8
5.6k×8
C36
0.1μCC
100pF×2
(3-7A) NEXRMQ
(3-6A) #UDS
(3-6A) #LDS
B2CGAD (12-1E)
B2MAPDB (11-4E)
B2MAPAD (11-1E)
B2CoL (11-5E)
NRAMRD (11-4E)
NRAMWRL (11-4E)
NRAMWRH (11-4E)
HCLK (11-6E)
B2CGADLB (12-4E)
#B2CGSEL0 (12-4E)
#B2CGSEL1 (12-4E)
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(13-3A) CRBACK1
(2-1A) BICGAD0
(2-6A) BICGADLD
(2-6A) *BICGSEL1
(13-2A) BIFLG1
(2-6A) *BICGSEL0
(13-2A) BIFLG2
+5V
18E
LS 273
18D
LS 273
3H
LS86
11H
LS32
13H
18H
LS08
18F
LS 157
27512 /MB 831000
27512 /27256
17D
15D
14D
12D
17F
15F
14F
12F
C39~42 0.1μ C.C
C59~62 0.1μ C.C
HFT-No1 回路図
LK-10082
データイースト株式会社

関連番号	仕様，名称



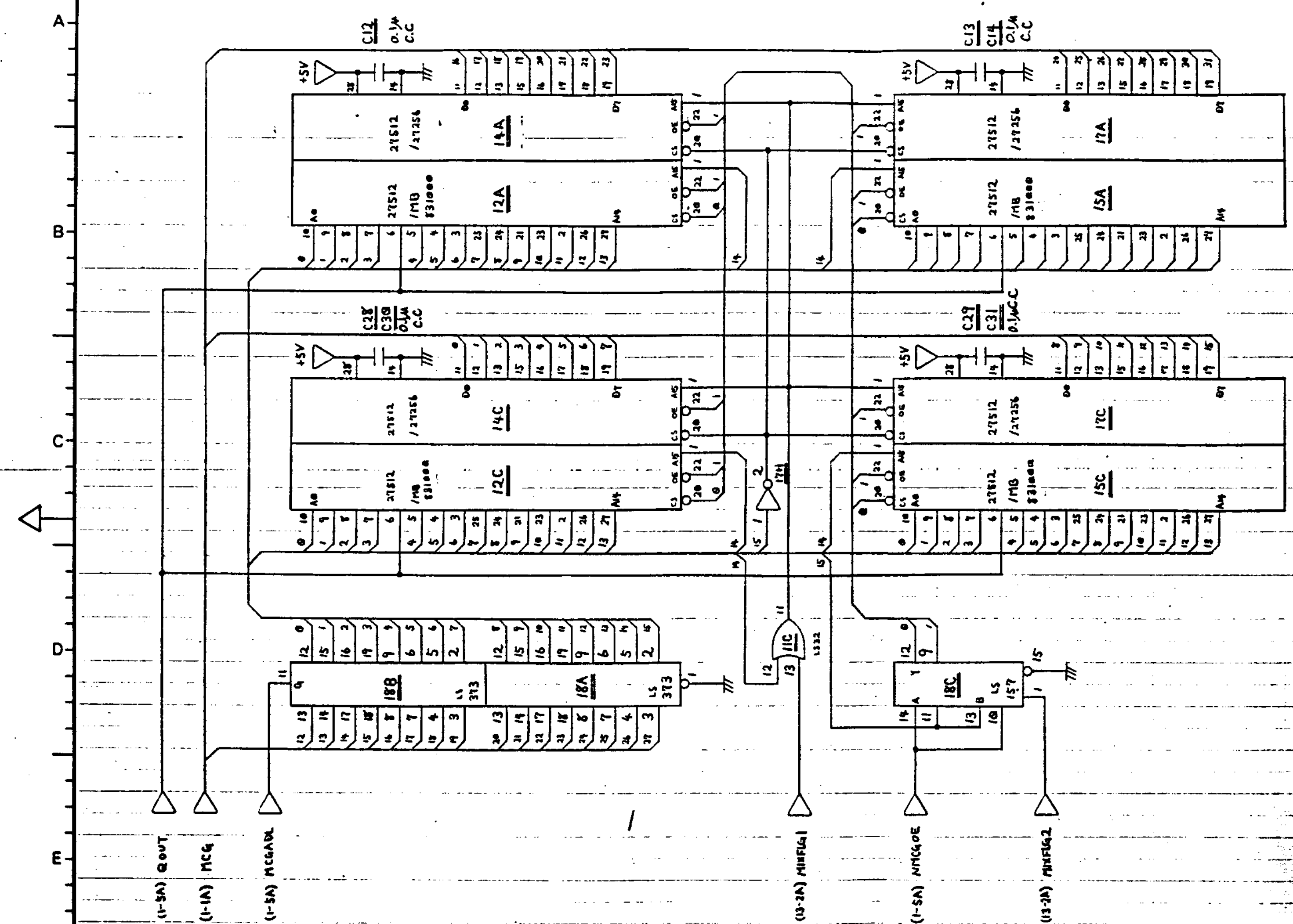
記号	担当	年月日	改 訂 個 所	符号	部品，図面番号	名 称	仕様，材質	個/台

記 事

材質	処理	公差	名称 HFT-NoI 回路図
承認 星野 62.11.26 / 検図	検図 假立 62.10.22 / 担当 岩部 62.8.12	単位 mm / 尺度 /	図番 LK-10082 / 8/17

第３角法

DECO データイースト株式会社



記号	担当	年月日	改訂個所	符号	部品,図面番号	名称	仕様,材質	個/台

関連番号	仕様,名称

記事

材質,

処理

公差

名称 HFT-No1 回路図

承認 星野 62.11.26

検図

検図 渡辺 62.10.22

担当 岩部 62.10.19

単位 mm

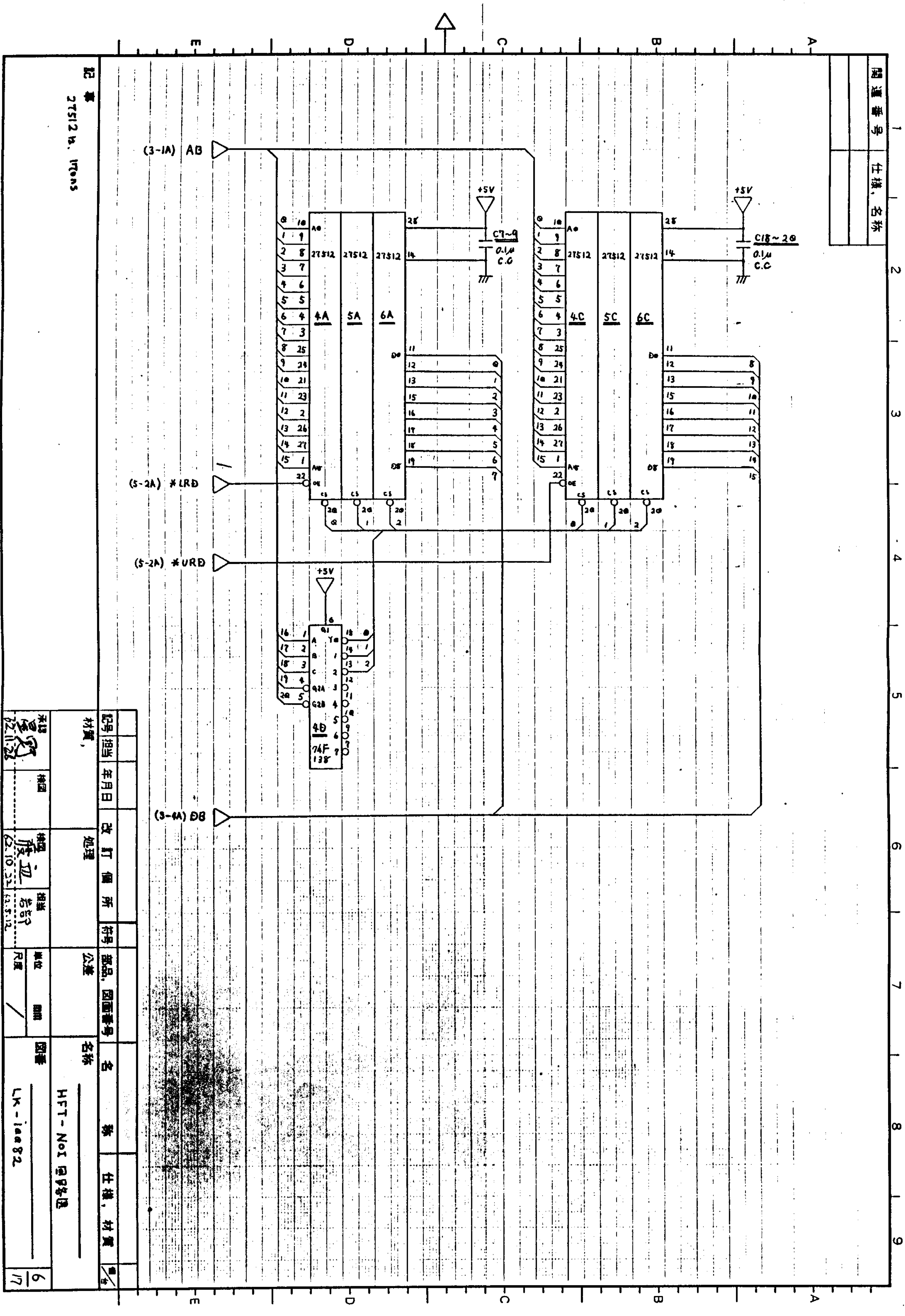
尺度 /

図番 LK-10082

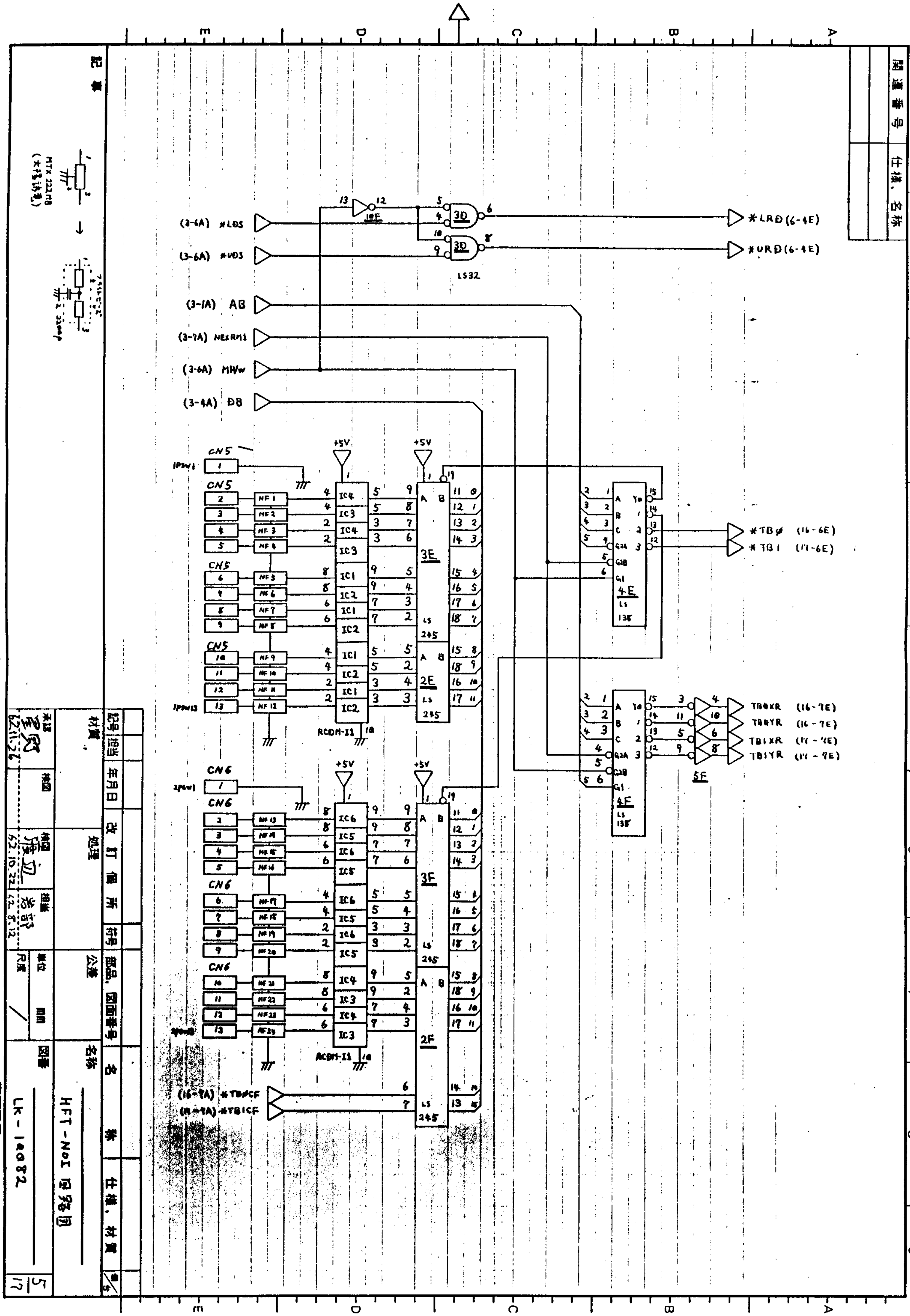
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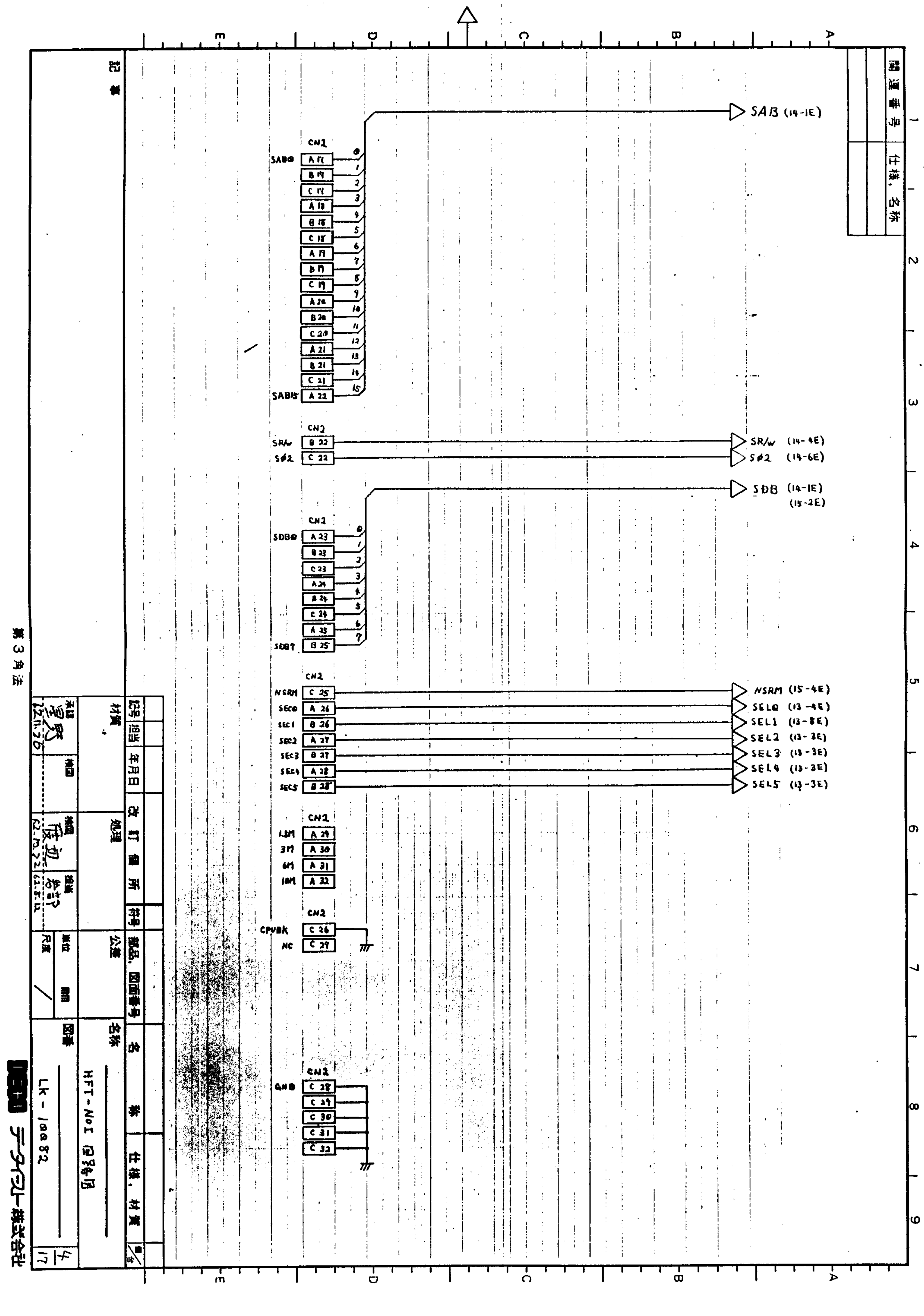
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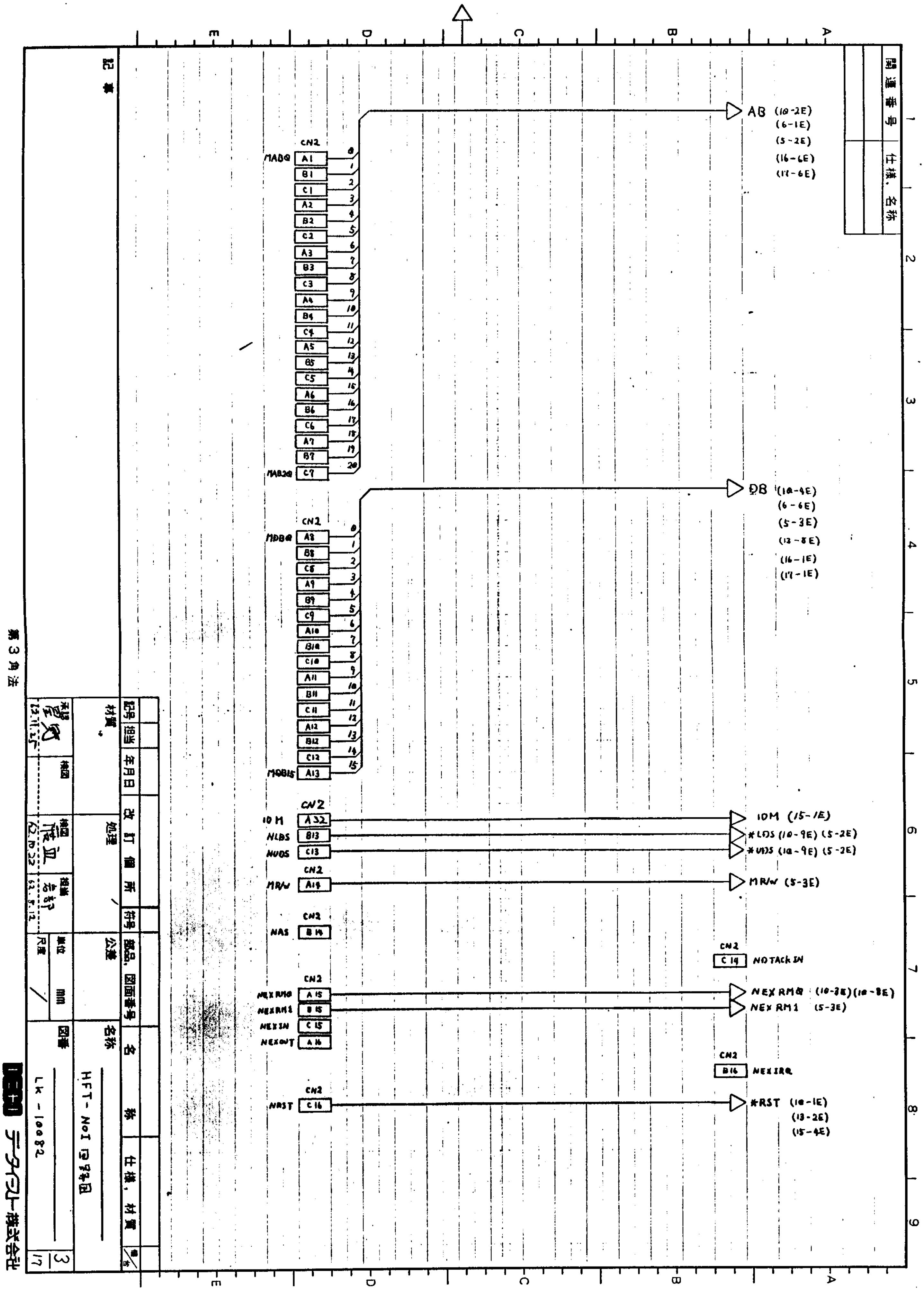
(3-1A) AB
(5-2A) *LRD
(5-2A) *URD
(3-4A) DB
+5V
27512
4A
5A
6A
4C
5C
6C
C7~9
0.1μ C.C
C18~20
0.1μ C.C
4D
74F138
27512は、170nS
記事
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関連番号
仕様、名称
記号
担当
年月日
改訂個所
符号
部品、図面番号
名称
仕様、材質
材質、
処理
公差
単位
尺度
図番
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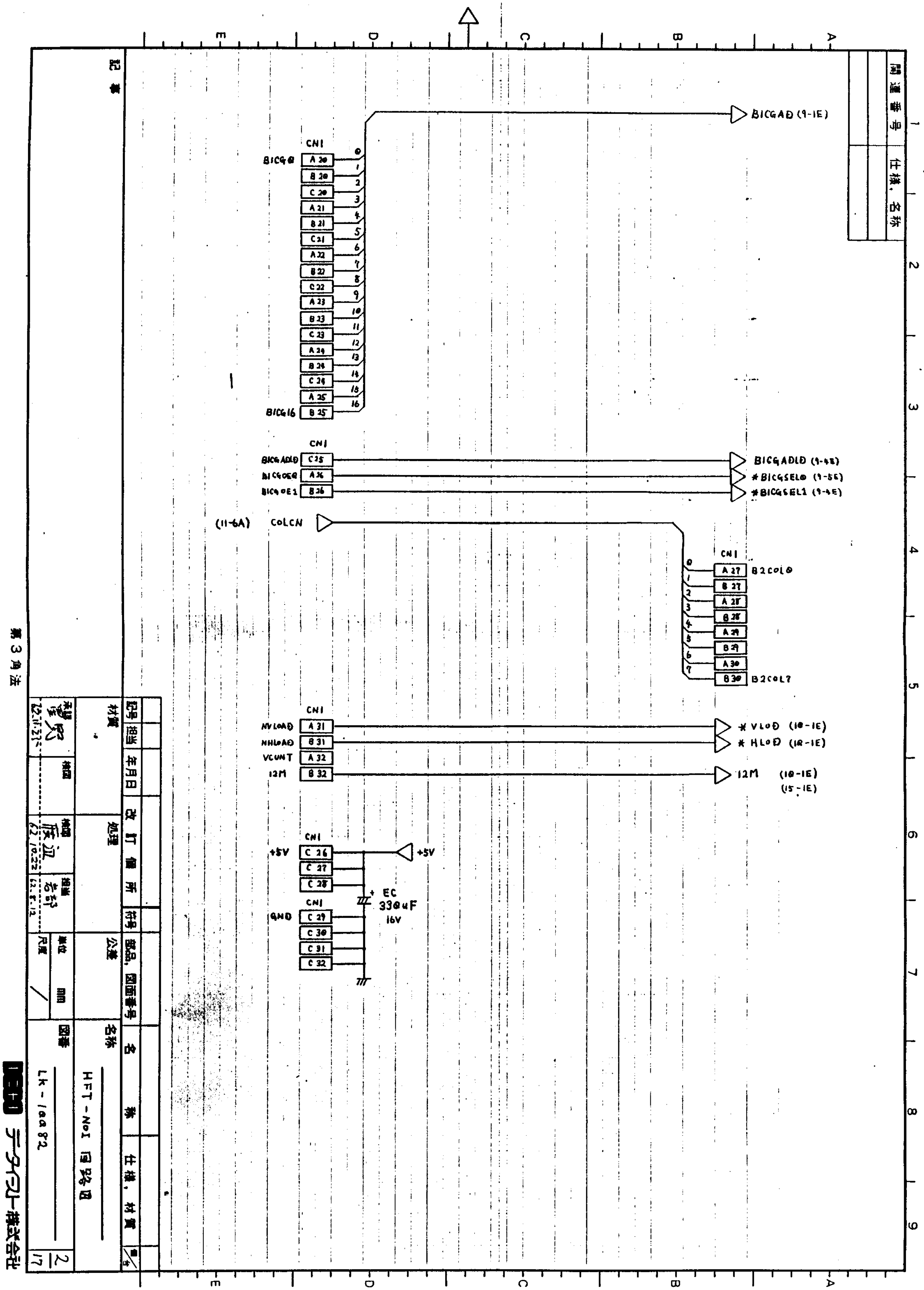
(3-6A) *LDS
(3-6A) *UDS
(3-1A) AB
(3-7A) NEXRM1
(3-6A) MR/W
(3-4A) DB
10E
3D
LS32
*LRD(6-4E)
*URD(6-4E)
CN5
CN6
+5V
3E
2E
3F
2F
LS 245
RCDM-11
4E
4F
LS 138
5F
*TBØ (16-6E)
*TB1 (17-6E)
TBØXR (16-7E)
TBØYR (16-7E)
TB1XR (17-7E)
TB1YR (17-7E)
(16-7A) *TBØCF
(17-7A) *TB1CF
MTX 222MB
関連番号
仕様、名称
記事
材質
処理
公差
単位 mm
尺度
名称
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CN2
SAB0 A17 B17 C17 A18 B18 C18 A19 B19 C19 A20 B20 C20 A21 B21 C21 A22 SAB15
SAB (14-1E)
SR/W B22
Sφ2 C22
SR/W (14-4E)
Sφ2 (14-6E)
SDB (14-1E) (15-2E)
SDB0 A23 B23 C23 A24 B24 C24 A25 B25 SDB7
NSRM C25
SEC0 A26
SEC1 B26
SEC2 A27
SEC3 B27
SEC4 A28
SEC5 B28
NSRM (15-4E)
SEL0 (13-4E)
SEL1 (13-3E)
SEL2 (13-3E)
SEL3 (13-3E)
SEL4 (13-3E)
SEL5 (13-3E)
1.5M A29
3M A30
6M A31
12M A32
CPUBK C26
NC C27
GND C28 C29 C30 C31 C32
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CN2
MADB0 A1 B1 C1 A2 B2 C2 A3 B3 C3 A4 B4 C4 A5 B5 C5 A6 B6 C6 A7 B7 C7 MADB20
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
AB (10-2E) (6-1E) (5-2E) (16-6E) (17-6E)
CN2
MDB0 A8 B8 C8 A9 B9 C9 A10 B10 C10 A11 B11 C11 A12 B12 C12 A13 MDB15
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
DB (10-4E) (6-6E) (5-3E) (13-8E) (16-1E) (17-1E)
CN2
IOM A32 → IOM (15-1E)
NLDS B13 → *LDS (10-9E) (5-2E)
NUDS C13 → *UDS (10-9E) (5-2E)
CN2
MR/W A14 → MR/W (5-3E)
CN2
NAS B14
CN2
C14 NOTACKIN
CN2
NEXRM0 A15 → NEXRM0 (10-3E)(10-8E)
NEXRM1 B15 → NEXRM1 (5-3E)
NEXIN C15
NEXOUT A16
CN2
B16 NEXIRQ
CN2
NRST C16 → *RST (10-1E) (13-2E) (15-4E)
関連番号
仕様, 名称
記事
第3角法
記号 担当 年月日 改訂個所
符号 部品, 図面番号 名称 仕様, 材質 個数
材質
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BICGAD (9-1E)
CN1
BICG0
A20 B20 C20 A21 B21 C21 A22 B22 C22 A23 B23 C23 A24 B24 C24 A25 B25
BICG16
BICGADLD C25
BICGOE0 A26
BICGOE1 B26
BICGADLD (9-4E)
*BICGSEL0 (9-5E)
*BICGSEL1 (9-4E)
(11-6A) COLCN
A27 B27 A28 B28 A29 B29 A30 B30
B2COL0
B2COL7
NVLOAD A31
NHLOAD B31
VCUNT A32
12M B32
*VLOD (10-1E)
*HLOD (10-1E)
12M (10-1E) (15-1E)
+5V C26 C27 C28
+5V
EC 330uF 16V
GND C29 C30 C31 C32
関連番号
仕様、名称
記事
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記号 担当 年月日 改訂個所
材質 処理 公差
符号 部品、図面番号 名称 仕様、材質
単位 mm
尺度
名称 HFT-No1 回路図
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